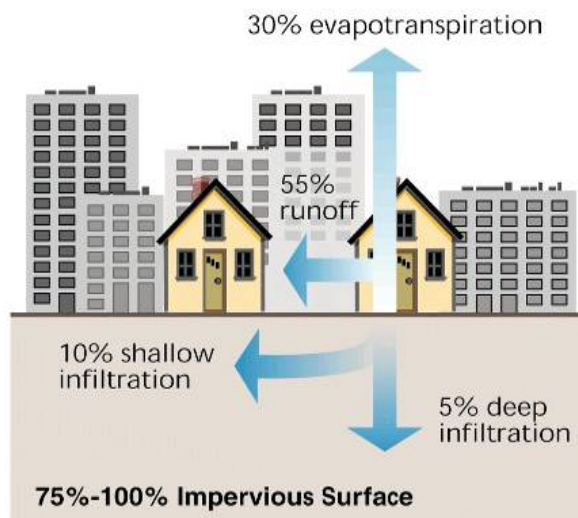
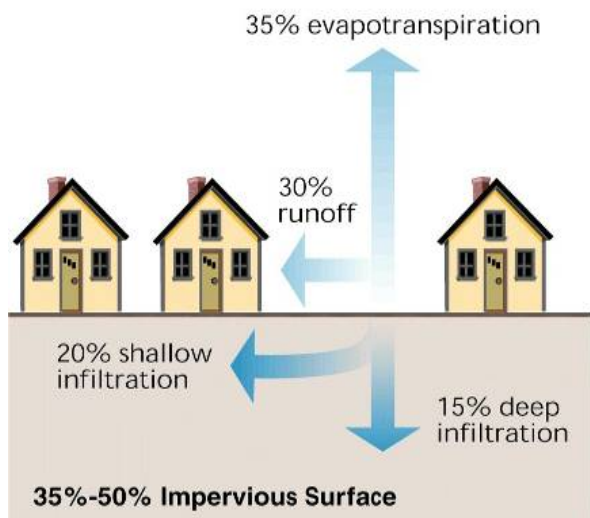
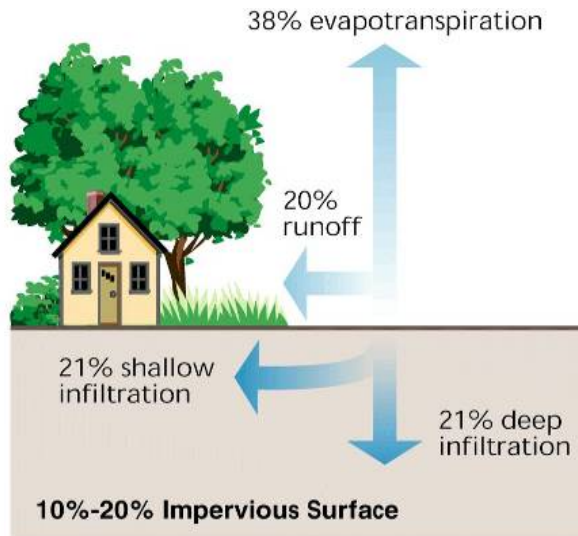
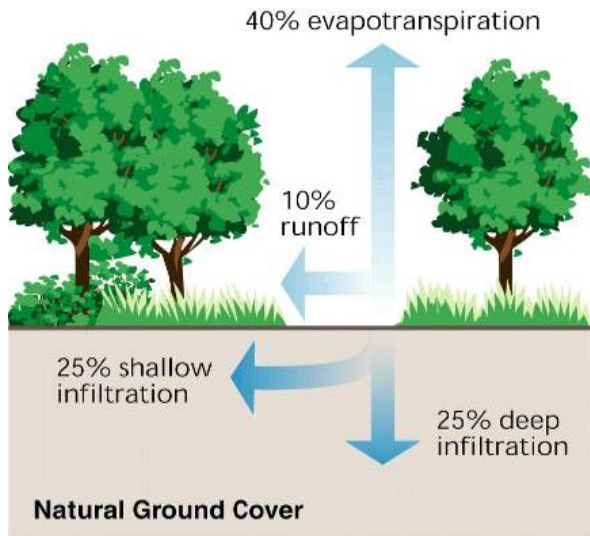


NEWSC Filtration Workshop

Overview of State Regulations for Filtration Systems



Why Post-Construction?



- Road Salts
- Oil and Grease
- Heavy Metals
- Heat
- PAHs
- Sediment
- Nutrients
- Oxygen-Demanding Substances
- Pathogens
- Trash

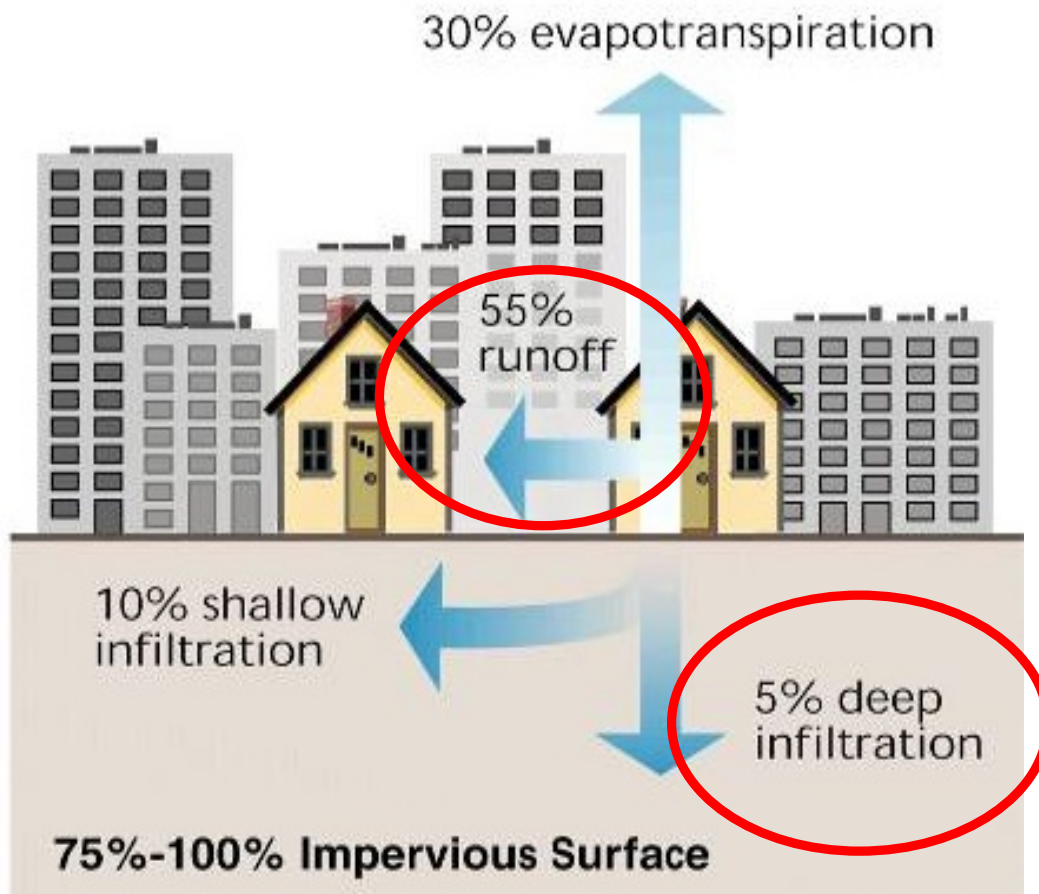


Post Construction Applicability

Section NR 151.121 (2) Exemptions

- <10% connected impervious AND < 1 acre impervious
 - Protective area standard still applies
- Agricultural facilities & practices
- Underground utility construction

Performance Standards



Filtration and Infiltration Practices can help:

- Reduce pollutants in runoff
- Mitigate increased runoff
- Increase Infiltration



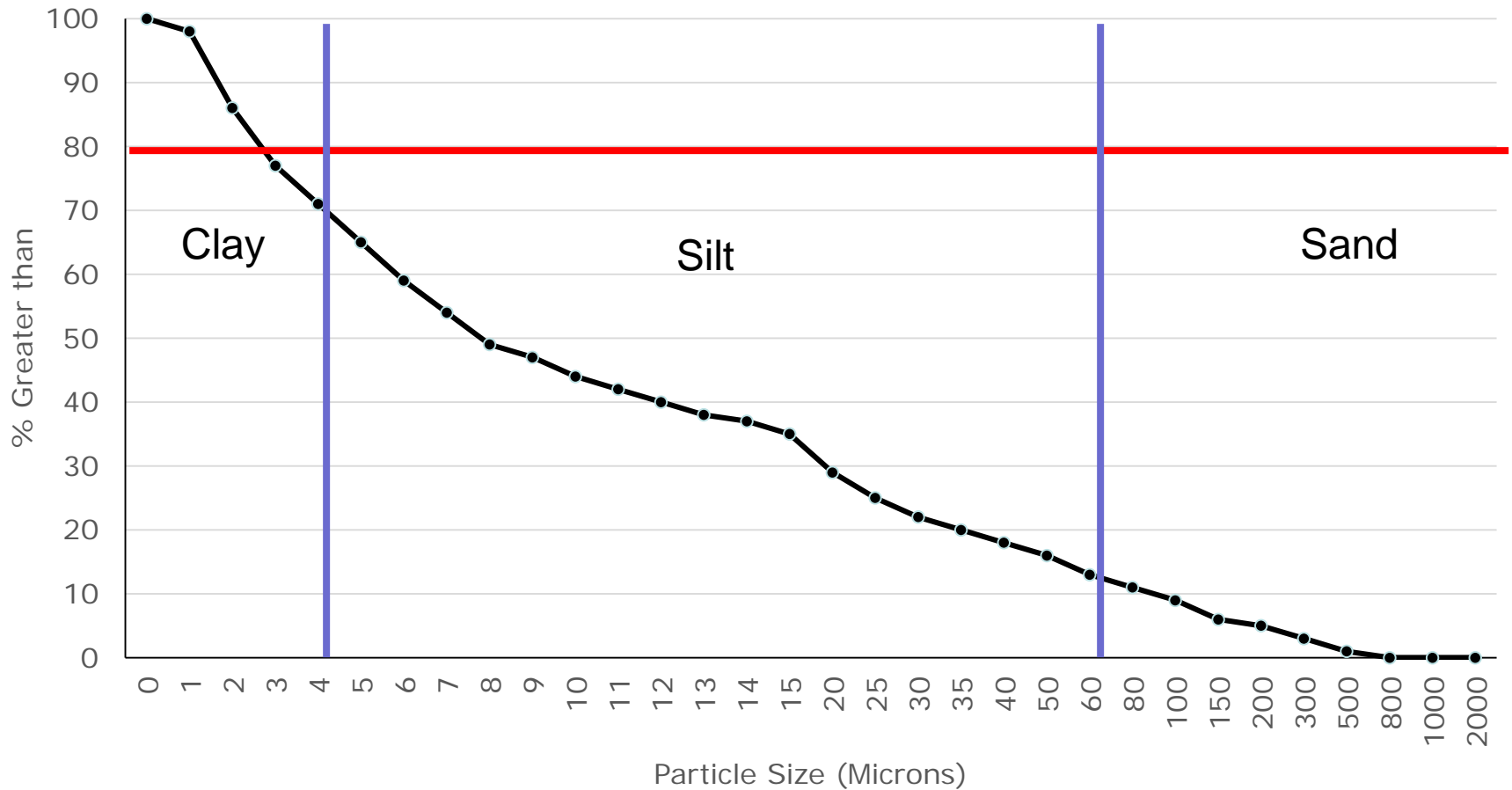
Pollution Control

Section NR 151.122 Total Suspended Solids (TSS)

- New Development and Infill: 80% TSS reduction from site
 - No credit for treating offsite area
- Redevelopment: 40% TSS reduction of load from parking areas and roads
 - No credit for reduction in impervious or conversion of surface type
 - No exemption for maintaining same impervious area

Correlation: Size and %TSS

Nationwide Urban Runoff Program (NURP) Particle Size Distribution





Cautions

- If redeveloping post-2004 site, must maintain effort
- Some devices are marketed as providing 80% TSS control but often that is based on testing with only sand sized particles



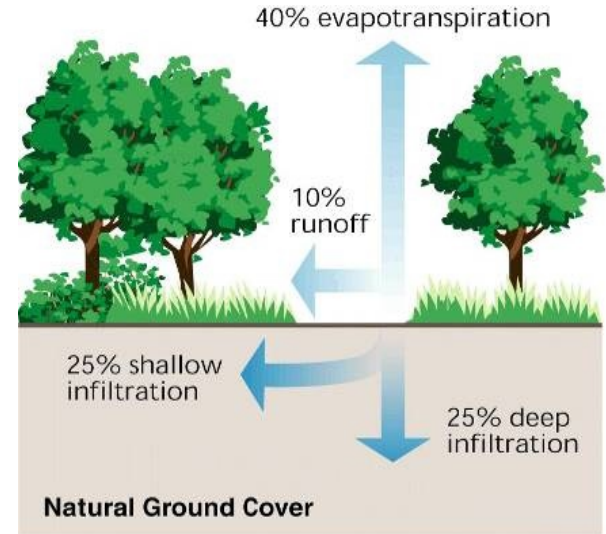
Peak Discharge

NR 151.123 Peak Discharge Performance Standard

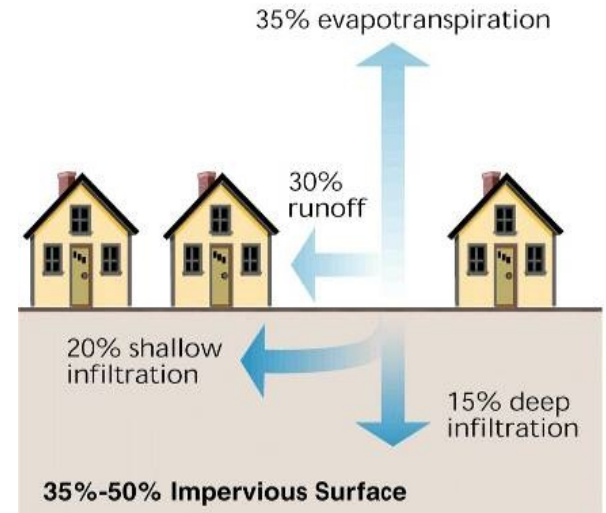
- Applies to New Development and Infill > 5 acres
- Exemption for direct discharge to lake > 5,000 acres or waterway segment draining > 500 square miles

Peak Flow Control

Time of concentration typically 20-60 min



Time of concentration typically 6-15 min





Storms

Post-Development \leq Pre-Development
Discharge for

- 1-Year, 24-Hour Rainfall
- 2-Year, 24-Hour Rainfall



For Type A soils, discharge is typically 0 cfs under pre-development for small storms. Infiltration can help meet this.



Infiltration

NR 151.124 Infiltration Performance Standard

- Practices Required
- Requirement varies by % connected impervious
- Percentage of predevelopment infiltration or maximum effective infiltration area

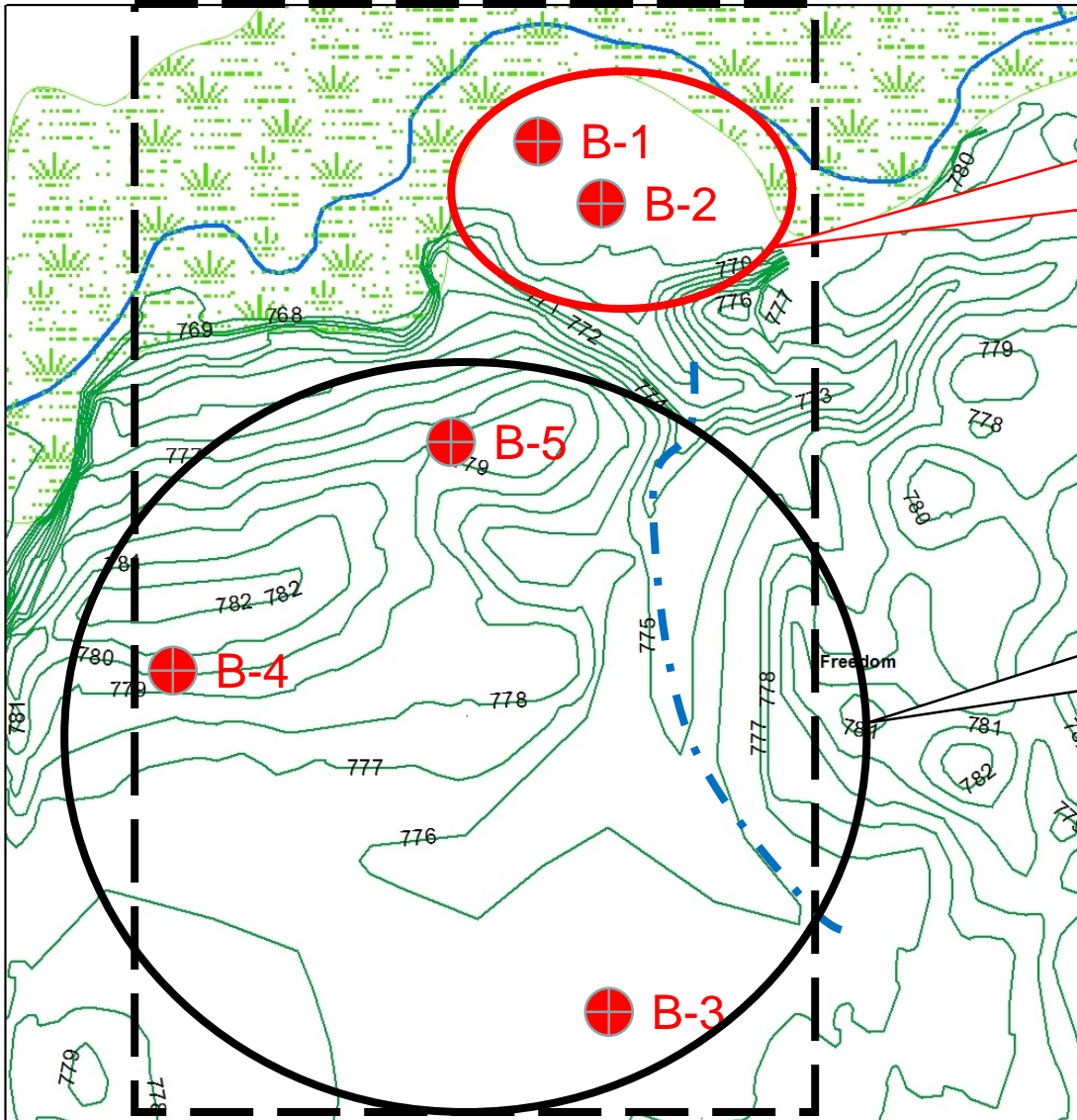


Infiltration

Optional Areas ('Exemption')

- Field Tested Rate < 0.6 inches/hr
- Clay soils
 - MUST have on-site soil data
 - Soil types MUST be in NR151.124(4)(c)2
 - Within 5' of bottom of systems
 - May only apply to part of site
- Not a prohibition from infiltration

Partially Exempt Sites



Clay Soils
Infiltration
Optional

Infiltration
Required



Infiltration

Optional Source Areas ('Exemption')

- Commercial and Industrial Parking and Access Roads < 5,000 SF
- Redevelopment (Unless original development post-2004)
- Infill < 5 acres
- Roads in commercial, industrial, and institutional land uses and residential arterials

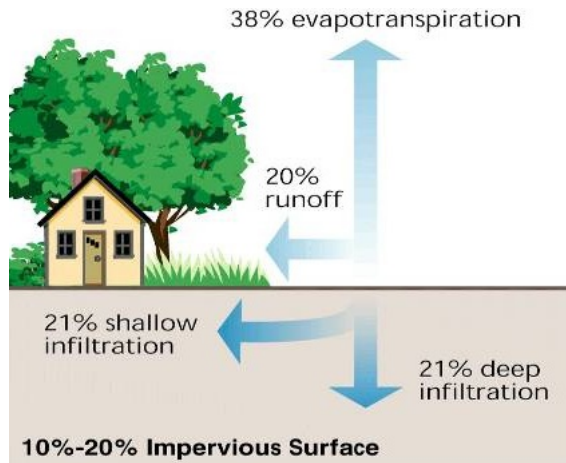


Benefits of Infiltration

- Maintain ground water levels
- Maintain base flow in streams
- Reduce peak flows
- Improve water quality



Low Imperviousness

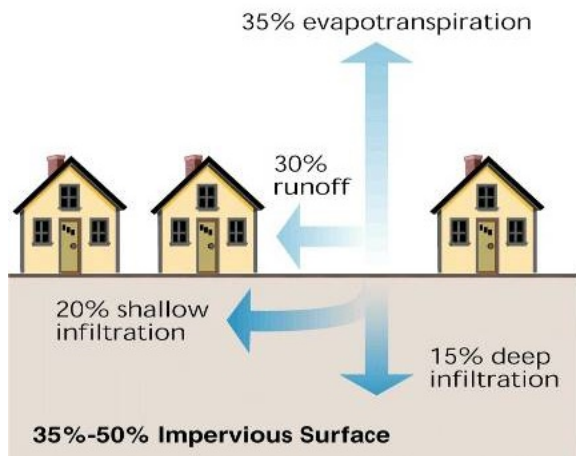


Up to 40% Connected Impervious

Post-Development Infiltration Volume $\geq 90\%$ Pre-Development Infiltration Volume

Requirement capped at 1% of total site as Effective Infiltration Area

Moderate Imperviousness

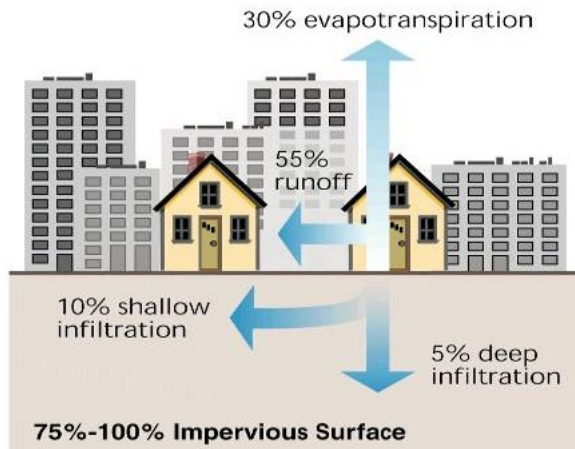


40-80% Connected Impervious

Post-Development Infiltration Volume $\geq 75\%$ Pre-Development Infiltration Volume

Requirement capped at 2% of total site as Effective Infiltration Area

High Imperviousness



>80% Connected
Impervious

Post-Development
Infiltration Volume $\geq 60\%$ Pre-Development
Infiltration Volume

Requirement capped at 2% of total site
as Effective Infiltration Area

Technical Standards



Business

Licenses & Regulations

Recreation

Env. Prote

Post-construction standards	Number	Effective date
Bioretention for infiltration [PDF]	1004	Oct-14
Compost [PDF]	S100	Oct-17
Infiltration basin [PDF] Fig. 1 [PDF] , Fig. 2 [PDF] , Fig. 3 [PDF] , Fig. 4 [PDF]	1003	Oct-04
Infiltration trench [PDF]	1007	May-12
Permeable pavement [PDF] Tech note [PDF]	1008	Feb-16
Proprietary storm water sedimentation devices [PDF]	1006	Apr-09
Rain Garden [PDF]	1000	Sep-18
Site evaluation for stormwater infiltration [PDF]	1002	Sep-17
Vegetated swale [PDF]	1005	Dec-17
Wet detention pond Part 1 [PDF] , Part 2 [PDF]	1001	Oct-07
Errata and notes <ul style="list-style-type: none"> • Process to assess and model grass swales (TSS reduction) (Nov-10) [PDF] • Internally Drained Area Guidance (Apr-09) [PDF] 		



Guidance

Additional information

- [Water quality review procedures for additives \[PDF\]](#)
- [Allowable usage rates for water applied additives \[PDF\]](#)
- [Modeling post-construction storm water management treatment \[PDF\]](#)
- [Meeting infiltration performance standard of ch. NR 151 \[PDF\]](#)
- [Storm water construction technical standards](#)
- [Rain gardens](#)
- [Storm water basins using natural landscaping for water quality and aesthetics \[PDF exit DNR\]](#)
- [Turf nutrient management](#)
- [Storm water detention ponds site safety design \[PDF exit DNR\]](#)
- [Storm water best management practices fact sheets](#)
- [Establishment of protective areas in wetlands \[PDF\]](#)
- [Agricultural technical standards](#)
- [Runoff management models/guidance](#)